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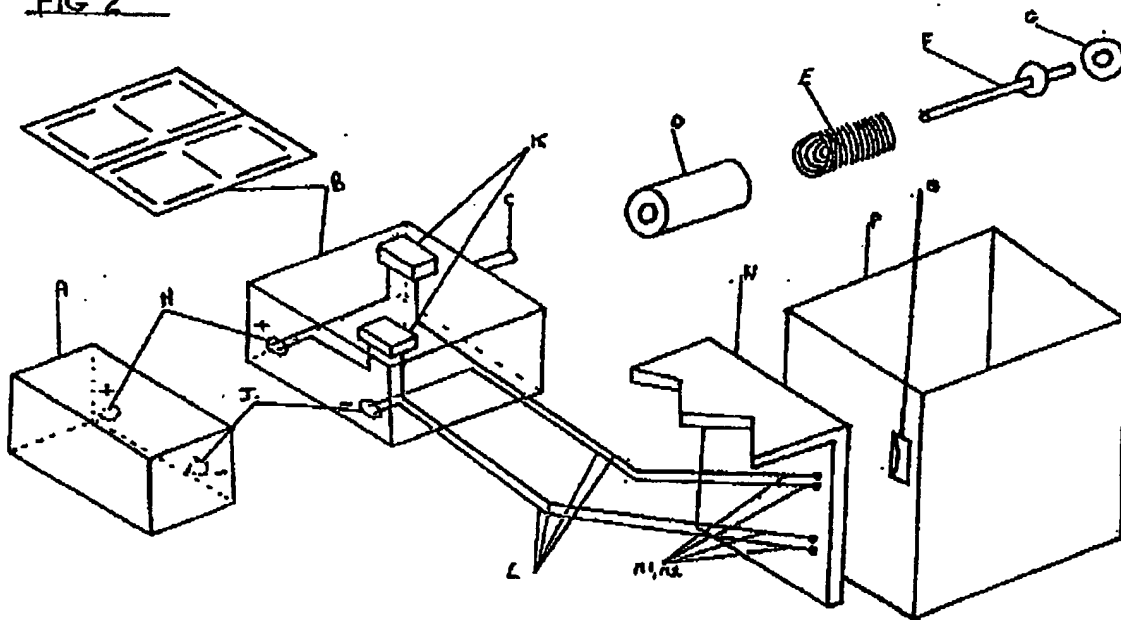
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(54) Cartridge counter

(57) A cartridge counter is provided for a firearm and is actuated each time a cartridge leaves a magazine P. A particular pair of terminals M1 or M2, depending on the magazine used is bridged when a cartridge is inserted, driving the counter to display at B a predetermined count, being the number of cartridges in a full magazine. Each time the bolt S of the firearm retracts (whether pulled back for priming or upon recoiling) it displaces a spring-based pin F to depress an actuator button C of the counter to decrement the displayed count. A battery A is provided for the counter.

FIG 2







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GB 2 182 424 A

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## SPECIFICATION

## Cartridge counter

5 This invention relates to a cartridge counter in or for a firearm which receives a magazine of cartridges, the counter being arranged to give a visual display of the number of cartridges left in or removed from the magazine fitted to the firearm.

10 Firearms known to date give no indication to the user of the number of cartridges remaining in the magazine nor any indication of when the last cartridge is about to be expended. This can lead to delays and uncertainties for the user of the firearm.

15 In accordance with this invention, there is provided a cartridge counter in or for a firearm which receives a magazine of cartridges, the cartridge counter comprising means for actuating the counter for each cartridge which leaves the magazine, the counter responding to each said actuation and including a visual display to indicate the number of cartridges which are left in, or which have left, the magazine.

20 In an embodiment which will be described below, a detector senses when a new magazine is fitted to the firearm and serves to drive the counter to display a predetermined number, being the number of cartridges in a full magazine. Then for each cartridge which leaves the magazine, the counter is decremented by one, until the magazine is empty and the display indicates zero. Removal of the magazine at any time, even if still containing more cartridges, resets the counter to zero.

25 In the embodiment to be described, the counter is actuated each time the bolt of the firearm retracts, either when it is pulled back for priming the firearm or when it recoils upon firing: in returning to its reset position each time, the bolt serves to remove a cartridge from the magazine and place it in the barrel ready for firing.

30 This embodiment of the invention will now be described by way of example only and with reference to the accompanying drawings, in which:

35 *Figure 1* is a longitudinal section through a rifle incorporating a cartridge counter; and

*Figure 2* is a view of the cartridge counter to show its component parts.

40 Referring to *Fig. 1*, there is shown a basic self-loading rifle having a barrel *V* extending from a steel casement *N*, a wooden stock *W* and a trigger *X*. A bolt *S* of the rifle is slidably mounted within the casement *N* on a sliding bar *U* and a spring *R* serves to return the bolt to its rest position towards the barrel-end of the casement. A magazine *P* fits into an aperture on the underside of the casement.

45 The cartridge counter comprises a cylindrical housing *D* which is mounted in the stock *W*

at the rear of the casement. A pin *F* is disposed in housing *D*, with its opposite ends projecting into the casement and out of the outer end of the housing *D* respectively. Pin *F* has an abutment in the form of an integral disc and a spring *E* acts between this and the outer end of the housing *D* respectively. Pin *F* has an abutment in the form of an integral disc and a spring *E* acts between this and the outer end of the housing *D*, to urge the pin to project into the casement. The housing *D* is formed as a separate sealed unit, with an apertured disc *G* attached to the open end of the housing to contain the pin *F* and spring *E*. The counter further comprises a digital counter *B* mounted in the stock and having an actuator button *C* aligned with the pin *F*. The digital counter *B* has a digital display which is viewed on the top of the stock, and is luminous to enable nightvision. A battery *A* for the counter is provided adjacent it, the poles of the battery and corresponding terminals to the counter being shown at *H*, *J* in *Fig. 2*. A detector for the presence or absence of a magazine is provided, comprising two pairs of insulated terminals *M1*, *M2* projecting into the socket which receives the magazine. These terminals are connected to the battery and digital counter over respective conductors *L*. The two pairs of terminals *M1*, *M2* are appropriate for two different magazines holding different numbers of cartridges.

50 In operation, when a magazine *P* is inserted, it serves to complete a circuit through the terminals *M2* (in the case shown) and this drives the counter to a predetermined count, corresponding to the number of cartridges in a full magazine: for the sake of this description suppose this number is 20. Thus upon inserting a magazine, the counter displays the number 20. Next the user will pull back the bolts, causing it to abut the pin *F* and displace this so as to strike and depress the actuator button *C*. This causes the counter to decrement one unit and thus display 19: when the bolt is released by the user, it is returned to its rest position by the spring *R* and as it moves towards the barrel it removes a cartridge from the magazine and places it in the barrel. At the same time pin *F* is returned to its idle position by the spring *E*. There are now 19 cartridges left in the magazine and the corresponding number is already displayed by the counter.

55 Upon pulling the trigger *X*, a firing pin *T* on the bolt serves to detonate the cartridge which is thus fired from the rifle. The recoil force throws the bolt back, causing the steps described above to be repeated. The counter is thus decremented by one again, to 18 in the example being described, and as the bolt is returned to its rest position by spring *R*, it removes another cartridge from the magazine and places it in the barrel (leaving 18 cartridges in the magazine).

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GB 2 182 424 A

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This sequence of steps is repeated each time the trigger is pulled, until the counter displays 0. The empty magazine is then removed, breaking the electrical circuit across

- 6 the terminals M2, and a new magazine is inserted, reconnecting this circuit to drive the counter to a count of 20 again. At this time, there is still a cartridge in the barrel, being the final cartridge from the old magazine: there is  
10 no need to pull back the bolt as the rifle is already primed and its automatic use can continue.

- In some situations it may be necessary to remove a magazine whilst there are still a few  
15 cartridges left in it. As the magazine is removed, the circuit across terminals M2 is broken and the counter is reset to 0. When the magazine is replaced by a full one, the circuit is again completed and the counter  
20 driven to its predetermined count of 20.

- The counter thus gives a constant visual display of the number of cartridges left in the magazine. The counter is particularly useful in firearms such as semi-automatic or fully automatic weapons such as assault rifles, machine  
25 guns, etc.

- In the case shown, the inserted magazine P bridges terminals M2, having the effect of driving the counter to one predetermined  
30 count (20 for example). The magazine is formed with an indentation or aperture Q in register with the other pair of terminals M1, so that these terminals are not bridged. The firearm may however be fitted with an alternative  
35 magazine having a different number of cartridges, this alternative magazine being arranged to bridge terminals M1 instead of terminals M2, having the effect of driving the counter to another predetermined count (corresponding to the capacity of this magazine).  
40 Thus the firearm is fully capable of using magazines of two different counts.

#### CLAIMS

- 45 1. A cartridge counter in or for a firearm which receives a magazine of cartridges, the cartridge counter comprising means for actuating the counter for each cartridge which leaves the magazine, the counter responding  
50 to each said actuation and including a visual display to indicate the number of cartridges which are left in, or which have left, the magazine.
2. A cartridge counter as claimed in claim  
55 1, comprising a detector for sensing when a new magazine is fitted to the firearm and serving to drive the counter to display a predetermined number.
3. A cartridge counter as claimed in claim  
60 2, in which the detector is further arranged to sense when a magazine is removed from the firearm and then to reset the displayed count.
4. A cartridge counter as claimed in claim  
65 2 or 3, in which the detector is arranged for sensing which of different magazines is fitted

to the firearm and to drive the counter to display a respective predetermined number according to which of the different magazines is fitted.

- 70 5. A cartridge counter as claimed in any preceding claim, arranged for actuation each time the bolt of the firearm retracts, either when pulled back for priming the firearm or when it recoils upon firing.
- 75 6. A cartridge counter as claimed in claim 5, in which the counter actuating means comprises a depressible actuator button and an axially displaceable pin aligned with (or for alignment with) the actuator button, the pin  
80 being arranged to be struck by the bolt of the firearm and displaced so as to about the actuator button each time the bolt retracts.
7. A cartridge counter in or for a firearm which receives a magazine of cartridges, the  
85 counter being substantially as herein described with reference to the accompanying drawings.

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